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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WALKER, KEITH D

ART UNIT

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1795

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/709,173	Applicant(s) BENSON ET AL.	
	Examiner KEITH WALKER	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 16-42 is/are pending in the application.
- 4a) Of the above claim(s) 18-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16, 17 and 39-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Remarks

Claims 1-14 & 16-42 are pending in the application and claims 18-38 are withdrawn from consideration. Claims 1-14, 16, 17 & 39-42 are pending examination as discussed below.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 4 & 6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 4 is dependent upon claim 1, which consists of an aluminum anode and a solid alkali metal peroxide cathode. The limitation of "a metal electrode" recited in claim 4 introduces a third metal electrode for the electrochemical battery since the first and second electrodes are already claimed as laid out in claim 1. Applicant does not have support in the instant application for a third electrode.

Claims depending from claims rejected under 35 USC 112, first paragraph are also rejected for the same.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4 & 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 4, it is unclear how a third metal electrode is operationally included in the claimed electrochemical cell of claim 1. Is the electrode the same as the already included anode or cathode? Does it replace one of the previously claimed anode or cathode? Based on the instant specification, [0063], it appears the metal electrode is referring to the current collector portion of the cathode and claims 4 & 6 will be interpreted as such for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5, 10, 16, 17, 39, 41 & 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Momyer (US 4,001,043) in view of Narang (US 6,991,876).

Momyer teaches a metal-water electrochemical cell comprising a lithium anode, a silver current collector and lithium hydroxide electrolyte in which the anode and the cathode are immersed. Momyer further discloses an anode moderator consisting of soluble peroxide ions, including hydrogen peroxide, sodium peroxide, sodium super

oxide, lithium peroxide, potassium peroxide and potassium super oxide (Claims 1, 2; 4:59-68).

With respect to claims 1-3, 5 & 41, Narang teaches an electrochemical cell comprising an aluminum anode, a solid alkali metal peroxide cathode comprising lithium peroxide (or sodium peroxide particulates) and a separator (an electrically insulating barrier) (6:4-12, 8:1-8, claim 1, Examples).

With respect to claims 4 & 10, Narang teaches the cathode further comprises a nickel current collector and the use of a glass woven separator between the anode and the cathode (Fig. 1; Examples). Since the anode, cathode and electrolyte taught by Narang are equivalent to the claimed anode, cathode and electrolyte, it is inherent that the components have the same characteristics. Therefore, it is inherent that the alkali metal peroxide of Narang passes through the metal electrode.

Regarding claims 16, 17 & 42, the disclosure of Narang differs from Applicant's claims in that Narang does not specifically disclose the ratio of the electrode bulk surface area of the anode to the electrode bulk surface area of the cathode. Nevertheless, it is well known in that art that the optimal ratio is dependent upon physical configuration of the galvanic cell and the chemical reactions present.

Therefore, it would have been within the skill of the ordinary artisan to adjust the ratio of the electrode bulk surface area of the anode to the electrode bulk surface area of the cathode in accordance to the configuration of the electrochemical and the kinetic of the reaction. *Discovery of optimum value of result effective variable in known*

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process is ordinarily within skill of art. In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215. (MPEP 2144)

4. Claims 1-3, 5-9, 11-15, 40 & 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh et al. (US 5,445,905) in view of Momyer (US 4,001,043).

With respect to claims 1, 2, 40 & 41, Marsh et al. teach an electrochemical cell comprising an anode of aluminum (12), a catholyte of hydrogen peroxide (18) and a spacer (30) (Figure 1; 2:20-54, example 1).

However, Marsh does not teach the use of an alkali metal peroxide cathode.

Momyer teaches a metal-water electrochemical cell comprising a lithium anode, a silver cathode and lithium hydroxide electrolyte in which the anode and the cathode are immersed. Momyer further discloses an anode moderator consisting of soluble peroxide ions, including hydrogen peroxide, sodium peroxide, sodium super oxide, lithium peroxide, potassium peroxide and potassium super oxide (Claims 1, 2; 4:59-68). Hydrogen peroxide and sodium peroxide are taught to be functionally equivalent soluble peroxides.

Therefore, it would have been obvious to one of ordinary skill in the art to substitute lithium peroxide (or potassium peroxide) for the hydrogen peroxide in the electrochemical cell disclosed by Marsh.

Regarding claim 6, Marsh is silent to using a woven silver plated copper wire for the cathode current collector. Momyer teaches the cathode current collector metal can be any of nickel, iron or preferably silver and that the metal collector is in the form of a

mesh (4:45-60). As such, Momyer teaches it is known in the art that silver is equivalent to nickel for a cathode current collector. Therefore, because these two metals are art recognized equivalents at the time of the invention was made, one of ordinary skill in the art would have found it obvious to substitute the silver metal mesh for the nickel metal.

The silver plated copper wire is equivalent to the solid silver wire. Since the same metals are used on the surface of the current collector, the metal used and the function of the metals as the cathode current collector are equivalent. It would be obvious to one skilled in the art at the time of the invention to substitute a silver plated copper wire for the solid silver wire taught by Momyer in order to save on the fabrication costs of the battery.

With respect to claim 7, Marsh teaches the aluminum with a purity of at least about 99.99% (3:44-46).

With respect to claims 8 & 9 Marsh teaches the use of potassium chloride or potassium hydroxide as the electrolyte solution (3:54-68).

With respect to claims 11-14, Marsh teaches the addition of water and hydrogen peroxide salt to the catholyte (3:54-68).

5. Claims 4, 10, 16 & 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh et al. (US 5,445,905) in view of Momyer (US 4,001,043) as applied to claim 1 above and further in view of Narang (US 6,991,876).

The teachings of Marsh and Momyer as discussed above are incorporated herein.

Marsh and Momyer are silent to using a fiberglass cloth barrier for the electrically insulating barrier.

Regarding claims 4 & 10, Narang teaches an electrochemical cell comprising an aluminum anode, a solid alkali metal peroxide cathode comprising lithium peroxide (or sodium peroxide particulates) and a separator (an electrically insulating barrier) (6:4-12, 8:1-8, claim 1, Examples). Narang teaches the cathode further comprises a nickel current collector (Fig. 1; Examples). Since the anode, cathode and electrolyte taught by Narang are equivalent to the claimed anode, cathode and electrolyte, it is inherent that the components have the same characteristics. Therefore, it is inherent that the alkali metal peroxide of Narang passes through the metal mesh electrode of Momyer.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the electrically insulating barrier of Momyer with the fiberglass barrier taught by Narang so as to provide an actual material for use as the electrolytic barrier and improve the operation of the battery by improving the components in the battery (1:45-55).

With respect to claims 16 & 42, Narang does not specifically disclose the surface area of the cathode and surface area of the anode are substantially stoichiometrically matched. However, it is the position of the examiner that such properties are inherent, given that both Narang and the present application utilize the same electrodes in the electrochemical cell. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference*. In re Robertson, 49 USPQ2d 1949 (1999) (MPEP 2112).

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection as necessitated by amendment.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH WALKER whose telephone number is (571)272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

K. Walker

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795